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Indian Standard

GENERAL REQUIREMENTS FOR AIR CARGO LOADING EQUIPMENT

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Indian Standard

GENERAL REQUIREMENTS FOR AIR CARGO LOADING EQUIPMENT

Air Cargo Handling Sectional Committee, MCPD 8

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Shri P. S. Das, Director (MCPD) (*Secretary*)	Director General, ISI (*Ex-officio Member*)

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*Shri P. R. Chandrasekhar was the chairman for the meeting in which this standard was finalized.

(*Continued on page* 2)

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Indian Standard

GENERAL REQUIREMENTS FOR AIR CARGO LOADING EQUIPMENT

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 30 March 1983, after the draft finalized by the Air Cargo Handling Sectional Committee had been approved by the Marine, Cargo Movement and Packaging Division Council.

0.2 This standard covers general requirements of air cargo loading equipment. The safety requirements of air cargo loading equipment are not covered in this standard and will be covered in a separate standard which is under preparation.

0.3 In order to facilitate international coordination on the subject, this standard is based on the document ISO TC 20/SC9 N121 'Basic requirements for aircraft loading equipment' issued by the International Organization for Standardization (ISO).

1. SCOPE

1.1 This standard covers the materials, design and general requirements of air cargo loading equipment.

2. MATERIALS

2.1 The materials used shall be corrosion-resistant and protected by plating or other surface treatment (for example, to resist the action of hydraulic fluids).

2.2 Material shall be selected which experience and/or tests have demonstrated to be suitable and dependable for use on aircraft cargo handling equipment.

3. DESIGN

3.1 Equipment, components and systems requiring periodic inspection and maintenance shall be readily accessible and shall permit assembly, disassembly and maintenance with general purpose tools and equipment normally available commercially.

3.2 Design shall be such as to eliminate loose parts as far as practicable. Where loose parts are unavoidable, they shall be attached to the equipment wherever possible, and fixed stowages shall be provided for their storage.

3.3 All components, assemblies and sub-assemblies incorporated into the equipment shall be interchangeable between similar units.

3.4 The designs, manufacturing processes and materials shall conform to the relevant Indian Standards.

3.5 Maximum importance shall be given to safety aspects which shall be incorporated as part of the basic design.

4. GENERAL REQUIREMENTS

4.1 Environment

4.1.1 The vehicles shall be designed and constructed of materials that shall allow unrestricted use in all climates with the minimum of modifications. The unit shall have provisions to easily adapt to temperature variations ranging from —40°C to +60°C and humidity of up to 100 percent. Consideration shall be given to ambient temperature variations, rain and freezing precipitation, dust, salt-sea air, and reasonable variations in atmospheric pressure.

4.1.2 The unit shall be capable of being operated day and night.

4.1.3 The noise level shall be kept to a minimum but shall not exceed 85PNdB (perceived noise deci-Bel) at a distance of 4·6 m from the perimeter of the vehicle and at 1·5 m above the ground.

4.1.4 There shall be provision for an anticollision light for visibility during night time.

4.2 Mobility

4.2.1 A braking system (commensurate with the user's requirements) shall be provided to stop vehicles under empty and full load conditions.

4.2.2 A parking brake shall be provided that will restrain the vehicle when fully loaded on an incline of 5° or more if specified by the user.

4.2.3 A means shall be provided to tow a stalled vehicle clear of an aircraft.

4.2.4 The fuel tank (gasoline, diesel or liquefied petroleum gas) capacity shall be sufficient for at least eight hours continuous operation.

4.2.5 Hydraulic valves and electrical circuits shall be provided with a by-pass system for manual operation in case of failure.

4.2.6 The vehicle shall be manoeuvrable in ice and snow and the driving wheels shall have a sufficient clearance to permit installation and use of chains.

4.2.7 It shall be possible to transport the unit by road, rail or sea. Parts may have to be removed to achieve the dimensions required by rules/regulations governing such transportation. The design should also consider the possibilities for air transportation.

4.3 Mechanical

4.3.1 Water traps and gulleys permitting dirt to collect shall be avoided. Where this is not practical, adequate drainage shall be provided.

4.3.2 Vibration shall be kept to a minimum and shall have no adverse effect on the unit or the operator.

4.3.3 The mechanical efficiency of powered or non-powered mono-directional conveyorized surfaces (such as roller beds) used to move unit load devices shall be in excess of 98 percent when measured at maximum allowable load, on a horizontal surface and in a good equipment condition.

4.3.4 The mechanical efficiency of powered or non-powered multi-directional conveyorized surfaces (such as caster beds or ball mats) used to move unit load devices shall be in excess of 96 percent when measured at maximum allowable load, on a horizontal surface and in a good equipment condition.

4.4 Electrical

4.4.1 Wiring shall be grouped in cable or harness form and shall be routed to provide maximum protection from abrasion, road splash, grease, oil, fuel, and excessive heat.

4.4.2 All electrical fittings, wiring and components shall be easily accessible.

4.4.3 All wiring shall be coded with markings for ease of repair and maintenance.

4.4.4 Electrical buttons, switches, etc, shall be suitably waterproofed.

4.4.5 As far as possible, standard electrical fittings shall be used for ease of availability and replacement.

4.5 Hydraulic and Pneumatic

4.5.1 All pipelines shall be coded with markings for ease of repair and maintenance.

4.5.2 All fittings, lines and components shall be located to provide maximum accessibility, consistent with good design practice to attain ease of maintenance. The routing of lines shall be such that inadvertant wrong connections shall not be possible.

4.5.3 Relief valves shall be installed in all systems to protect against pressures in excess of the rated working pressure of each system component. Non return valves, where used shall have directions of flow clearly marked on the body of the unit and also on the adjacent structure to preclude the possibility of wrong installation during repair/ replacement.

4.5.4 System pressures shall be kept as low as possible, consistent with practical and economic design.

4.6 Controls

4.6.1 Controls and warning lights shall be grouped and located so as to be convenient to the operator from his normal operating station or stations. Where there is more than one station, interlocks shall be provided at each station to render inoperative the controls of all other stations.

4.6.2 Controls and warning lights shall be properly and permanently identified.

4.6.3 Actuation of the controls shall be in the same direction as the controlled function, wherever possible.

4.6.4 Conventional automotive driving controls shall be used where possible.

4.6.5 Controls shall be designed for operation even if the operator is wearing heavy arctic-type gloves or overshoes.

4.6.6 Adequate illumination shall be provided for the controls of the unit.

4.7 The equipment must have the instruments for safe operation as laid down by the customers.

4.8 Documents covering details of operation, maintenance, repair and overhaul and spare parts shall be provided.

INDIAN STANDARDS

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AIR CARGO HANDLING

IS :	
7073 (Part I)-1973	Glossary of terms relating to air cargo pallets and containers, Part I Air cargo pallets
7074 (Part I)-1973	Air cargo pallets, Part I General requirements
7917 (Part I)-1975	Air cargo freight containers, Part I General requirements
7917 (Part II)-1975	Air cargo freight containers, Part II Testing
8169 (Part I)-1976	Air cargo container—main deck container (2 438 × 2 438 mm) for high capacity air craft, Part I General requirements
8169 (Part II)-1976	Air cargo container—main deck container (2 438 × 2 438 mm) for high capacity air craft, Part II Testing
8396-1978	Air cargo base sandwich panel
8589 (Part I)-1977	Net-assembly to secure cargo on air craft pallets, Part I General requirements
8762-1978	General requirements and testing of certified half size lower deck containers for high capacity aircraft
7074 (Part II)-1978	Air cargo pallets, Part II Testing
9753-1981	Tie-down fittings for aircraft net assemblies
10195-1982	General requirements for insulated air cargo containers
10196-1982	Guidelines for transportation of dead body and cremated remains of human beings